Name:

Date:

Find the roots of each function:

1) f(x) = 8x2 – 8x – 18 2) f(x) = 2x2 – x – 6 3) f(x) = 8x2 + 6x + 5

How is problem #3 different from the other two?

The **imaginary number *i*** is defined as the number whose square is -1.

*i*² = -1 and 

**Simplify each expression using *i*.**

Imaginary number and real numbers make up the set of **complex numbers.**

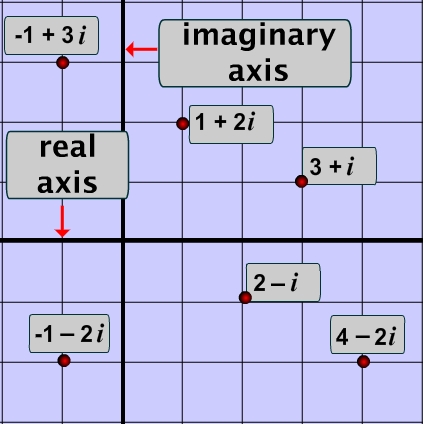
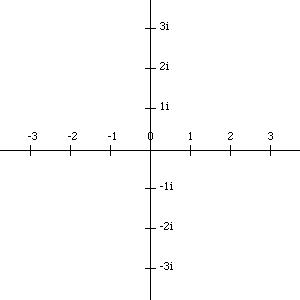
**Complex Number**: *a + bi*

Real part Imaginary part

Write the following complex numbers in the form *a + bi*.

You can use the **complex number plane** to represent complex numbers geometrically

You can apply the operations of real numbers to complex numbers.

Find the additive inverse of each number:

-2 + 5*i* -5*i*

4 - 3*i a – bi*

To add or subtract complex numbers, combine the real parts and the imaginary parts separately.

Simplify:

(5 + 7*i*) + (-2 + 6*i*) (8 + 3*i*) – (2 + 4*i*)

7 – (3 + 2*i*) (4 – 6*i*) + 3*i*

**To Multiply Complex Numbers:**

1. Multiply the real numbers
2. Substitute -1 for *i*²
3. Multiply regularly

Multiply:

(5*i*)(-4*i*) (2 + 3*i*)(-3 + 5*i*) (12*i*)(7*i*)

(6 – 5*i*)(4 – 3*i*) (4 – 9*i*)(4 + 3*i*) (3 – 7*i*)(2 – 4*i*)

**To Find Complex Solutions for Quadratic Equations:**

1. Isolate *x²*
2. Find the square root of *x*²
3. Simplify the square root using an imaginary number

Solve:

4*x*² + 100 = 0 3*x*² + 48 = 0

-5*x*² – 150 = 0 8*x*² + 2 = 0